

Petroleum Refinery Transition to Renewable Fuel Production



Draft Report on Regulatory Processes During Conversion of Petroleum Refining to Renewable Fuel Production

July 2021

Executive Summary

In September 2020, Governor Newsom signed Executive Order N-79-20 furthering the state's transition from its reliance on climate change-causing fossil fuels while retaining and creating jobs, spurring economic growth, and maximizing environmental, health, and safety benefits.

As part of this Order, California Environmental Protection Agency (CalEPA) and the California Natural Resources Agency (CNRA) were directed:

"To support the transition away from fossil fuels consistent with the goals established in this Order and California's goal to achieve carbon neutrality by no later than 2045, the California Environmental Protection Agency and the California Natural Resources Agency, in consultation with other State, local and federal agencies, shall expedite regulatory processes to repurpose and transition upstream and downstream oil production facilities, while supporting community participation, labor standards, and protection of public health, safety and the environment. The agencies shall report on progress and provide an action plan, including necessary changes in regulations, laws or resources, by July 15, 2021."

This document is part of a multiagency effort to meet the direction of Executive Order N-79-20 and provides information on regulatory processes by which existing refineries in the state may transition their production facilities from fossil fuel to renewable energies¹. Efforts underway in other agencies include:

CNRA

The development of renewable energy on oil and gas fields will be covered in the CNRA lead interagency report on remediating and repurposing oil fields.

Interagency Refinery Task Force

This document was developed in consultation with the Interagency Refinery Task Force (IRTF) that was formed by Cal EPA following a directive from the Governor's July 2013 report on "Improving Public and Worker Safety at Oil Refineries," The Task Force membership includes ten state agencies, U.S. EPA, and local agencies from

¹ The information provided in this document is based on regulatory agency experience involving the conversion of a petroleum refinery to a renewable fuels facility. The regulatory / permitting issues outlined may or may not apply to refiner conversion throughout all jurisdictions in California. The regulatory agencies who aided in the development of this document do not make any assurance, express or implied, for the accuracy, completeness, or any third party's use or the information provided herein. The statements provided herein shall not be relied upon for any specific application without independent verification and assessment.

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areas of the state that contain refineries. The IRTF works collaboratively to achieve the highest possible level of safety for refinery workers and local communities, and prepare for and effectively respond to emergencies if they occur. CalEPA staff worked through the IRTF to (1) document the different regulatory requirements for transitioning an existing refining facility from petroleum to renewables, and (2) identify recommendations for future improvements to the transition process.

Findings

In working with the IRTF, CalEPA staff identified the following:

1. The transition from refining petroleum to renewable materials involves significant changes in a refinery's existing processes and equipment leading to changes in the required permits with regulatory agencies such as the Certified Unified Program Agencies (CUPAs) and local air districts. Changes in production process may trigger alterations in Hazardous Materials, Hazardous Waste, California Accidental Release Program (CalARP), and Aboveground Petroleum Storage Act (APSA) permits. In addition, there may be modifications required to permits obtained through local air districts or local governments that may require an environmental analysis under the California Environmental Quality Act (CEQA).
2. The transition from refining petroleum to renewable materials may result in the production facility changing from a CalARP Program 4 (Petroleum Refinery) stationary source and Cal/OSHA PSM §5189.1 (refinery) designation to a CalARP Program 3 (Chemical Processing) stationary source and Cal/OSHA PSM 5189 (non-refinery) designation, if the facility is no longer identified as a petroleum refinery according to the North American Industry Classification System (NAICS) which was developed as the standard for use by Federal statistical agencies in classifying business establishments for the collections, analysis, and publication of statistical data. This determination requires site specific evaluation of the hazardous properties and volume of fuels produced by the facility.
3. The changes in permitting described above require regulatory agencies to determine the appropriate regulatory scheme for the modified processes at each refinery before specific permit decisions can be made. While there have been no specific reports of delays in the review and determination process for these permits, the process can be lengthy. There is currently no prioritization process for the review of permits related

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to renewables or transitions away from traditional oil refining relative to other permits.

4. Communities that live and work adjacent to the refineries are key stakeholders in any transition process. A balance should be struck between expediting permitting of these renewable facilities and the ability of impacted groups to review and provide input.

Recommendations

To achieve the highest possible level of safety for local communities, workers, and the environment, to promote consistency of law and regulation throughout the state, and to create efficiency of government, CalEPA staff have the following recommendations:

1. The IRTF will be utilized as the mechanism to inform and update all participating agencies and stakeholders (including but not limited to: community representatives, non-governmental organizations, labor organizations, etc.) on any refinery in the process of converting from petroleum refining to renewable fuel production. This will allow all participating agencies and stakeholders the ability to:
 - a. Stay informed on all current issues
 - b. Ask clarifying questions on areas of concern
 - c. Comment on areas of concern
2. All regulatory agencies alerted of a transition by a refinery from petroleum to renewable should:
 - a. Discuss the notification with all IRTF participating agencies and stakeholders.
 - b. Create a workgroup of agencies having jurisdiction over the specific refinery for information exchange and general oversight
3. All regulatory reviews and processes should be followed to ensure:
 - a. Protection of public health and safety, worker safety, and the environment
 - b. All law and regulation standards and requirements have been attained.
 - c. Public consultation has been requested for permit decisions.
4. All regulatory reviews and permitting should be made in a timely manner to expedite the process in accordance with Executive Order N-79-20. CalEPA will work with the Governor's Office of Business Development (Go-

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Biz) to identify opportunities to work with facilities on permit streamlining or prioritized processing.

5. CalEPA routinely meets with public and community groups to discuss pertinent issues and concerns that arise concerning refineries. CalEPA shall continue this practice and reach out to more refinery fence-line communities for engagement.
6. Cal/OSHA to review the anticipated hazardous properties and volume of fuels and develop recommendations regarding the facility's compliance with either PSM §5189.1 (refineries) or §5189 (non-refineries). This will inform the decision regarding the application of either Cal/ARP Program 4 or Cal/ARP Program 3.

ACTION PLAN

To ensure continued progress, CalEPA will lead the collaborating agencies in the following Action Plan:

	Lead Agency	Collaborating Agencies	By When
1. The IRTF will be utilized as the forum to inform and update all participating agencies and stakeholders of any refinery in the conversion process	CalEPA	Members and stakeholders of the Interagency Refinery Task Force (IRTF)	Ongoing
2. Creation of regulatory agency workgroup to support refinery transition	Cal EPA	IRTF	Upon notification of transition
3. Coordination with the Governor's Office of Business Development on ongoing permit streamlining	Cal EPA	Go-Biz	October 2021
4. Provide opportunities for public engagement through the IRTF	Cal EPA	Members of IRTF	Ongoing
5. Review and update report and action plan findings	Cal EPA	Members of IRTF California Natural Resources Agency Go-Biz	Bi annually beginning in October 2021

STAKEHOLDER PERSPECTIVES

CalEPA held meetings and engaged in discussions with labor and community stakeholders. Major themes discussed are summarized below.

Labor

This section will reflect comments received from Labor groups concerning refinery transition.

Community

This section will reflect comments received from Community groups concerning refinery transition.

BACKGROUND

Replacement of fossil fuels with renewable fuels has the potential to decrease greenhouse gas (GHG) and conventional pollutant emissions. To incentivize the production of renewable fuels, the US Environmental Protection Agency's **Renewable Fuel Standard** (RFS) Program requires that 36 billion gallons of renewable fuel replace or reduce the quantity of petroleum-based transportation fuel, jet fuel or heating oil by 2022. Also, pursuant to the California Assembly Bill (AB) 32 Scoping Plan and the Governor's Executive Order S-01-07, California Air Resources Board's (CARB) **Low Carbon Fuel Standard** (LCFS) regulations encourage the production and use of low-carbon transportation fuels in California to reduce GHG emissions and decrease dependency on petroleum-based fuels.

Historically, petroleum refineries convert crude oil into useful fuel products such as naphtha, gasoline, diesel, heating oil, jet fuel, and liquified petroleum gas (LPG). Processes in the production of these petroleum based fuels (hydrotreating and separation processes) can be used in the production of renewable fuels as well, making petroleum refineries excellent candidates for conversion to renewable fuel facilities. This conversion has been found to be faster and dramatically more cost effective.

To aid in this effort, Governor Newsom signed Executive Order N-79-20 on September 23, 2020 (<https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf>) directing the California Environmental Protection Agency (CalEPA) and the California Natural Resources Agency (CNRA) to "expedite regulatory processes to repurpose and

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transition upstream and downstream oil production facilities, while supporting community participation, labor standards, and protection of public health, safety, and the environment".

Interagency Refinery Task Force

Following a directive from Governor Brown's July 2013 report on "Improving Public and Worker Safety at Oil Refineries," CalEPA formed an Interagency Refinery Task Force (IRTF) on in August 2013. The Task Force membership includes ten state agencies, U.S. EPA, and local agencies from areas of the state that contain refineries (a full list of the entities represented in the IRFT can be found in Appendix A). The goal of the IRTF was to achieve the highest possible level of safety for refinery workers and local communities, and prepare for and effectively respond to emergencies if they occur.

To meet the direction provided in the Governor's Executive Order (N-79-20), CalEPA staff used the IRTF as an advisory body to compile information on the status of the 3 refineries currently in the process of converting from petroleum based refining to renewables.

Refineries in the State

There are 14 refineries operating in California. The table below provides the location, the type of product being refined, and state regulatory scheme under which each operates.

Refinery & Location	Product	Unified Program Agency	Air District	Cal OSHA
Chevron Richmond	Petroleum	Contra Costa County Health Services Hazardous Materials Program	Bay Area Air Quality Management District	Northern California Process Safety Management Unit
Phillips 66 Rodeo	Petroleum / In Transition to Renewable	Contra Costa County Health Services Hazardous Materials Program	Bay Area Air Quality Management District	Northern California Process Safety Management Unit
Marathon Martinez	Currently a terminal, possible conversion to	Contra Costa County Health Services Hazardous Materials Program	Bay Area Air Quality Management District	Northern California Process Safety Management Unit

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Refinery & Location	Product	Unified Program Agency	Air District	Cal OSHA
	renewable fuels			
PBF Martinez	Petroleum	Contra Costa County Health Services Hazardous Materials Program	Bay Area Air Quality Management District	Northern California Process Safety Management Unit
Valero Benicia	Petroleum	Solano County Environmental Health	Bay Area Air Quality Management District	Northern California Process Safety Management Unit
Chevron El Segundo	Petroleum	City of El Segundo	South Coast Air Quality Management District	Southern California Process Safety Management Unit
Phillips 66 Wilmington	Petroleum	City of Los Angeles Fire	South Coast Air Quality Management District	Southern California Process Safety Management Unit
Valero Wilmington	Petroleum	City of Los Angeles Fire	South Coast Air Quality Management District	Southern California Process Safety Management Unit
PBF Torrance	Petroleum	LA County Fire / Torrance Fire	South Coast Air Quality Management District	Southern California Process Safety Management Unit
Paramount Oil Paramount	Renewable	LA County Fire, Health Hazardous Materials Division	South Coast Air Quality Management District	Southern California Process Safety Management Unit
Marathon Carson	Petroleum	LA County Fire, Health Hazardous Materials Division	South Coast Air Quality Management District	Southern California Process Safety Management Unit

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Refinery & Location	Product	Unified Program Agency	Air District	Cal OSHA
ALON Bakersfield	Transitioning to Renewable in 2022	Kern County Environmental Health	San Joaquin Valley Air Pollution Control District	Southern California Process Safety Management Unit
Kern Oil Bakersfield	Petroleum	Kern County Environmental Health	San Joaquin Valley Air Pollution Control District	Southern California Process Safety Management Unit
Phillips 66 Santa Maria	Petroleum - likely to be shut-down in 2022.	San Luis Obispo County Environmental Health	San Luis Obispo County Air Pollution Control District	Southern California Process Safety Management Unit

A map of the refineries locations can be found in Appendix C.

Refineries Transitioning to Renewables

There are 4 facilities within the state that have formally notified regulatory agencies that they are beginning the transition to renewable fuels:

- Marathon Martinez Refinery in Contra Costa County. This facility has been idling since April 2020 and is currently operating only as a terminal. Marathon have started the permit process with Bay Area Air Quality Management District (BAAQMD). A Notice of Preparation for an Environmental Impact Report (EIR) regarding the proposed Martinez Refinery Renewable Fuels Project (project) has been submitted to Contra Costa County Department of Conservation and Development (DCD) - as DCD is the California Environmental Quality Act (CEQA) Lead Agency. The units that are not targeted as part of the conversion have been completely de-commissioned, purged and cleaned.
- World Energy in Los Angeles County. This facility is in the process of conversion to the production of sustainable aviation fuel. The facility is progressing through the permitting process and is currently undergoing the CEQA review with the City of Paramount as the Lead Agency. The CEQA review is expected to finish by September 2021.
- Phillips 66 Rodeo Refinery in Contra Costa County will continue to operate as a petroleum refinery while undergoing the conversion process. Contra Costa County DCD is the CEQA Lead Agency and they are in the process of preparing the Environmental Impact Report.

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- Global Clean Energy Holdings LLC has reported in their SEC filings that work is underway at the idle Bakersfield refinery formerly owned by Delek Holdings and Alon Refining. Production of renewable diesel is scheduled to commence during early 2022.

Current Regulatory Framework for Refineries

Refineries in California are currently subject to federal, state, and local regulations. This document will reflect pertinent regulatory information concerning the conversion under the local regulatory Certified Unified Program Agencies (CUPAs), California Air Resources Board (CARB), local air quality management districts, California Division of Occupational Safety and Health Administration (Cal OSHA), and other regulatory agencies involved in the oversight of refineries. A full listing of the potential regulatory and permit requirements for a refinery are listed in Appendix B.

Unified Program

The Unified Program is implemented at the local level by government agencies certified by the Secretary of CalEPA. The local Certified Unified Program Agency (CUPA) is required to consolidate, coordinate, and make consistent the administrative requirements, permits, fee structures, and inspection and enforcement activities for these six program elements within its jurisdiction. Most CUPAs have been established as a function of a local environmental health or fire department. There are 83 CUPAs around the state.

The state agency partners involved in the Unified Program have the responsibility of setting program element standards, working with CalEPA on ensuring program consistency and providing technical assistance to the Unified Program Agencies. The Unified Program consolidates the administration, permits, inspections, and enforcement activities of the following six programs:

- **Hazardous Materials Business Plan (HMBP) Program.** The purpose of the HMBP program is to prevent or minimize the damage to public health and safety and the environment, from a release or threatened release of hazardous materials. It also satisfies community right-to-know laws. This is accomplished by requiring businesses that handle hazardous materials in quantities equal to or greater than 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of compressed gas, or extremely hazardous substances above the threshold planning quantity (40 CFR, Part 355,

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Appendix A) to submit the information in a Hazardous Materials Business Plan to the CUPA.

- **Hazardous Waste Generator Program.** Hazardous wastes may be a liquid, solid or sludge. The wastes may be by-products of manufacturing processes or has been determined by the generator the material is no longer usable. The CUPA is charged with overseeing the Hazardous Waste Generator Program. The purpose of this program is to ensure that all hazardous wastes generated by businesses are properly handled, recycled, treated, stored, and disposed.
- **Aboveground Petroleum Storage Act (APSA) Program.** The APSA program regulates tank facilities that are subject to the federal Spill Prevention Control and Countermeasure rule or tank facilities with an aggregate storage capacity of 1,320 gallons or more of petroleum in aboveground storage containers or tanks with a shell capacity equal to or greater than 55 gallons. The purpose of the APSA program is to protect the public health and safety, and the environment from releases of petroleum from large above ground tanks.
- **Underground Storage Tank (UST) Program.** An underground storage tank (UST) is defined by law as "any one or combination of tanks, including pipes connected thereto, that is used for the storage of hazardous substances and that is substantially or totally beneath the surface of the ground" (certain exceptions apply). The purpose of the UST Program is to protect the public health and safety, and the environment from releases of petroleum and other hazardous substances from USTs. There are four program elements, (1) leak prevention, (2) cleanup, (3) enforcement, and (4) tank tester licensing.
- **California Accidental Release Prevention Program (CalARP).** CalARP is the state version of the Federal Risk Management Program and requires the submittal of a Risk Management Plan (RMP). The goal of the CalARP Program is to reduce the likelihood and severity of consequences of extremely hazardous materials releases. CalARP requires certain facilities which handle specified chemicals in listed threshold quantities to take specified actions to proactively prevent and prepare for chemical accidents. RMP includes descriptions of these prevention programs as well as information on accidental hazardous material releases in the Offsite Consequence Analysis (OCA).

California Air Resources Board (CARB)

CARB is charged with protecting the public from the harmful effects of air pollution and developing programs and actions to fight climate change. From requirements for clean cars and fuels to adopting innovative solutions to reduce greenhouse gas emissions, California has pioneered a range of effective approaches that have set the standard for effective air and climate programs for the nation, and the world.

CARB's mission is to promote and protect public health, welfare, and ecological resources through effective reduction of air pollutants while recognizing and considering effects on the economy. CARB is the lead agency for climate change programs and oversees all air pollution control efforts in California to attain and maintain health-based air quality standards.

Local Air Districts

California's 35 local Air Districts are responsible for regional air quality planning, monitoring, and stationary source and facility permitting. The districts administer air quality improvement grant programs and are CARB's primary partners in efforts to ensure that all Californians breathe clean air.

California Division of Occupational Safety and Health (DOSH, commonly known as Cal/OSHA)

The Division of Occupational Safety and Health (DOSH), better known as Cal/OSHA, sets and enforces workplace safety and health standards; provides outreach, education, and assistance; and issues permits, licenses and certifications. The Cal/OSHA Process Safety Management (PSM) unit enforces its 2017 PSM refinery safety regulation (§5189.1) at the state's 14 petroleum refineries, and it enforces a less comprehensive, 1992 PSM regulation (§5189) at approximately 18,000 chemical plants. The PSM unit conducts process safety inspections; investigates process incidents; issues citations for violations of Cal/OSHA's PSM regulations; defends citations under appeal; and, in the event of an imminent process hazard, issues Orders Prohibiting Use, which prohibit a unit from restarting until process hazards have been abated to the satisfaction of Cal/OSHA.

**POTENTIAL REGULATORY AND PERMIT IMPLICATIONS OF THE FACILITY
CONVERSION PROCESS**

The process of conversion from petroleum to renewable fuels will span the different laws, regulations, and regulatory agencies described above. This section provides pertinent regulatory information concerning the conversion under the local regulatory CUPAs, CARB, local air quality management districts, and other regulatory agencies involved in the oversight of refineries.

Certified Unified Program Agency Involvement

The conversion of a petroleum refinery to a renewable fuels facility may have regulatory impacts pertaining to the permitting through the local CUPA. The changes in facility processes may require updates to existing information on file with the CUPA, and in certain cases, permit modifications may be required. Below are high level issues to be addressed when transitioning from petroleum refining to renewable fuels.

- **Hazardous Materials Business Plan Program**
 - Any change to the facility use or storage of hazardous materials inventory requires that the Hazardous Materials Business Plan to be updated.
 - Changes to the facility may require revisions to the Site Maps listed in the current Hazardous Materials Business Plan accepted by the CUPA – including annotating intermediate storage areas during decommissioning process.
 - Changes to the facility may require revision to the Emergency Response Plan, including the potential reduction of emergency response personnel, on site fire suppression resources, and the impacts to mutual aid agreements.
- **Hazardous Waste Generator Program**
 - Transitioning from petroleum production to renewable fuels can cause a change to the Standard Industrial Classification (SIC) code designation of the facility. When a facility no longer has a petroleum refining SIC Code, the facility may be disqualified from specific exemptions/exclusions provided by statute and/or regulation. Many refinery specific exemptions and exclusions can be found in HSC 25143.2. Refineries often use these exemptions/exclusions to recycle and treat waste.

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The conversion, idling, and/or decommission of a unit may generate large amounts of hazardous waste (e.g., catalyst waste, tank bottoms/heals, etc.) over a short period of time which may lead to possible storage, disposal, and accumulation time problems. Based on these accumulation amounts and timeframes, a facility may even change Hazardous Waste generation categories (Small Quantity Generator, Conditionally Exempt Small Quantity Generator, Large Quantity Generator, Episodic Large Quantity Generator) resulting in changes to regulatory requirements.

- Hazardous materials / wastes should be removed from equipment and tanks that will be decommissioned, idled, or reused. All contaminated equipment, structures, and soils need to be properly disposed of or decontaminated by removing all hazardous waste and residues.
- A large number of hazardous waste tanks may need to be properly cleaned and closed.
- Treatment of Hazardous Waste (also known as the Tiered Permitting Program)
 - Potential closure of tiered permitting treatment units. Treatment units may continue to be used during unit decommissioning process. Waste determination applies at point of generation. New treatment permits may be required if refinery exemptions are lost, waste inputs change, etc.
 - As a result of the conversion process, facility may sell, recycle, or dispose of materials that were previously used/reused on site. Waste determinations must be made and documentation to support exclusion/exemption claims may be required.
- **Aboveground Petroleum Storage Act Program**
 - Aboveground containers and/or tanks in an underground area along with associated piping containing 100% non-petroleum products (e.g., vegetable oils, rendered animal fats, waste cooking oils, etc. that do not contain “crude oil, or a fraction thereof, that is a liquid at 60 degrees Fahrenheit and 14.7 pounds per square inch absolute pressure”) previously subject to APSA laws may no longer be subject to APSA.

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- These aboveground containers and associated piping may still be subject to the Federal Spill Prevention, Control, and Countermeasure (SPCC) rules and regulations. Under APSA, the term “petroleum” means crude oil, or a fraction thereof, that is *liquid* at 60°F temperature and 14.7 psi. Under the [federal SPCC rule](#), the term “petroleum oil” is not limited to a liquid at 60°F and 14.7 psi. Under the federal SPCC rule, petroleum oil means petroleum in any form, including but not limited to crude oil, fuel oil, mineral oil, sludge, oil refuse, and refined products (40 CFR 112.2). The federal SPCC rule does not address *de minimis* concentration in its definition of oil, other than the determination that the oil could be reasonably expected to be discharged into or upon navigable waters or adjoining shorelines in quantities that may be harmful, as described in [40 CFR 110.3](#) (violates water quality standards or causes a sheen, sludge or emulsion – referred to as [the “sheen rule”](#)).
- **Underground Storage Tank Program**
 - Underground storage tanks that previously contained a hazardous substance as defined by California Health and Safety Code Section 25281(h) are still subject to California Underground Storage Tank Laws/Regulations until all closure requirements in Sections 2670-2672, Title 23 of the California Code of Regulations are satisfied.
- **California Accidental Release Prevention Program (CalARP)**
 - Depending on the origination materials used in the production (also known as “feed stock”) of renewable fuels may not have the sulfur containing compounds contained in the petroleum production process.
 - Depending on the feed stock of the renewable fuel production, the Offsite Consequence Analysis (OCA) may require changes or updates. For instance, possible hazards may now be limited to flammables substance and not necessarily a toxic substance issues.
 - The facility Risk Management Plan will require updates to OCA and possible other prevention programs.
 - Anticipates generation of propane, butane as by-product of the refining/separation process
 - With the elimination of petroleum based materials, and the change of the NAICS Code to a non-petroleum based processing category,

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the facility would not be under the Program 4 (Petroleum Refinery) requirements under the CalARP program. The facility most likely will move to the Program 3 (Chemical Processing) requirements of the CalARP program, although this will depend on the hazardous properties and volume of fuels produced by the facility and will require further evaluation.

Air Quality Permitting Issues

The conversion of a petroleum refinery to a renewable fuels facility may involve several additions and/or modifications impacting Air Quality that an Air District may need to consider prior to permitting such facilities. A summary of the possible modifications to the facility that may affect Air Quality related issues is provided below:

- Existing equipment serving crude oil processing (process units, heaters, load/unload racks and storage tanks) may need to be shut down.
- Possible construction of a new Hydrogen Generation Unit, and/or increased hydrogen delivered to the facility.
- Possible Installation of new process units, such as Renewable Fuels Unit, Pre-Treatment Unit, Wastewater Treatment and other supporting facilities such as Pretreat Unit, Propane Recovery Unit, Hydrogen Sulfide Recovery Unit, Sour Water Stripper, Wastewater Treatment Unit, Sour Water Stripper, Acid Gas Disposal, Amine/Fuel Gas Treating, Amine Regeneration, etc.
- Potential installation of new flare and flare gas recovery to support existing, new and modified process units.
- Possible construction of new heaters to support Renewable Fuels Unit and Hydrogen Generation Unit.
- Possible installation of Selective Catalytic Reduction (SCR) to existing combustion sources to reduce nitrogen oxide (NO_x) emissions.
- Repurposing (modifications and adjustments to throughput and commodities) of existing fixed and floating roof storage tanks (new tanks likely not required as part of the conversion).
- Repurposing (modifications and adjustments to throughput and commodities) of existing loading/unloading racks.
- The Renewable Fuels Feedstocks may have noticeable odor, and may require additional controls on the feedstock storage tanks and/or loading racks.
- Modifications to existing process units, supporting units and equipment, such as reactors, separators, stripper towers, fractionation towers, vessels, heat exchangers, pumps, and compressors.

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- Possible modifications to existing cooling towers to reduce drift.
- The converted facility is not likely to be subject to any NSPS regulations for Petroleum Refinery (Subpart J, Ja, GGG, GGGa, QQQ, etc.).
- Transition from fossil fuels to renewable fuels may involve a CEQA review. CEQA review would generally be required for government projects (e.g., permitting decisions) associated with refinery conversion. If conversions resulted in significant impacts on the environment, for instance by increasing pollution emissions, feasible mitigation would be required.

Cal OSHA Issues

In 2017, Cal/OSHA implemented a substantial revision to its PSM regulation for petroleum refineries (CCR §5189.1), which closely tracks the Cal/ARP Program 4 regulation. The 24-part PSM regulation, "*Process Safety Management for Petroleum Refineries*," modernized process safety at refineries by requiring comprehensive PSM programs that, for example:

1. Involve employees in decision-making
2. Integrate inherent safety into corrective actions
3. Ensure transparency and accountability
4. Improve Process Hazard Analyses (PHAs)
5. Identify and mitigate damage mechanisms
6. Assess and improve safety culture
7. Integrate and improve human factors
8. Schedule and implement corrective actions
9. Protect contractor employees
10. Incorporate industry-wide best practices.

The PSM and Cal/ARP refinery regulations established a common framework for managers to invest in process safety and build their PSM programs over time, and they improved agency cooperation among Cal/EPA, Cal/OSHA, county CUPAs and U.S. EPA in training, inspections and enforcement.

When refineries convert from petroleum to renewable fuel production, it is important that they continue to be covered by the PSM and Cal/ARP regulations because the fuels they produce will continue to be flammable.

The largest refineries might need to be covered by Cal/OSHA's 2017 PSM regulation for petroleum refineries (§5189.1) and Cal/ARP Program 4, depending on the volume of fuels they produce; however, because the regulations specifically apply to petroleum refineries, not to renewables, it might be necessary for California to take special action to ensure these refineries continue

to comply as they transition. This could be accomplished by conditioning the issuance of permits on the refiner's certification of continued compliance, for example.

Findings

Through working with the Interagency Refinery Task Force, CalEPA staff identified common themes from the three refineries that have begun the process of conversion.

1. The transition from refining petroleum to renewable materials involves significant changes in a refinery's existing processes and equipment leading to changes in the required permits with regulatory agencies such as the Certified Unified Program Agencies (CUPAs) and local air districts. Changes in production process may trigger alterations in Hazardous Materials, Hazardous Waste, California Accidental Release Program (CalARP), and Aboveground Petroleum Storage Act (APSA) permits. In addition, there may be modifications required to permits obtained through local air districts or local governments that may require an environmental analysis under the California Environmental Quality Act (CEQA).
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Recommendations

To achieve the highest possible level of safety for local communities, workers, and the environment, to promote consistency of law and regulation throughout the state, and to create efficiency of government, CalEPA staff have the following recommendations:

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6. Cal/OSHA to review the anticipated hazardous properties and volume of fuels and develop recommendations regarding the facility's compliance with either PSM §5189.1 (refineries) or §5189 (non-refineries). This will inform the decision regarding the application of either Cal/ARP Program 4 or Cal/ARP Program 3.

Conclusion

This document is meant to be a living document and updated as laws, regulations, or any other issues change. Consultation and coordination amongst regulatory agencies, industry, and stakeholders have been the basis for the information provided herein. Discussions with regulatory agencies overseeing the conversion for the Paramount Refinery and the proposed conversions for the Marathon and Phillips 66 refineries have been greatly beneficial in forecasting any potential issues in the future. It has been found that, currently, there are no needed changes to laws and regulations. Continued collaboration with stakeholders during Interagency Refinery Task Force meetings, as well as other additional outreach, will aid in expediting the permitting process while still ensuring the utmost public, worker, and environmental safety achievable.

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Appendix A – Members of the Interagency Refinery Task Force (IRTF)

State and Federal Agencies

- California Environmental Protection Agency
- California Air Resources Board
- Department of Toxic Substances Control
- State Water Resources Control Board
- Department of Industrial Relations, Division of Occupational Safety and Health
- Cal OSHA
- Governor’s Office of Emergency Services
- California Department of Public Health
- California Emergency Medical Services Authority
- Office of the State Fire Marshal
- U.S. Environmental Protection Agency Region 9

Certified Unified Program Agencies With Refineries

- Contra Costa County Health Services Hazardous Materials Programs
- El Segundo Fire
- Kern County Environmental Health
- Los Angeles County Fire
- City of Los Angeles Fire
- San Luis Obispo County Environmental Health
- Solano County Environmental Health

Local Air Pollution Control Districts With Refineries

- Bay Area Air Quality Management District
- San Joaquin Valley Air Pollution Control District
- San Luis Obispo County Air Pollution Control District
- South Coast Air Quality Management District

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Appendix B – Regulatory and Permitting Framework for Refineries in California

Regulation/Activity	Agency/Department	Requirement	Purpose
Safety and Prevention			
Process Safety Management (PSM)	Labor/DIR/Cal/OSHA	Statewide	To prevent release of hazardous chemicals that could expose employees and others to serious hazards.
California Accidental Release Prevention Program (CalARP) Risk Management Plan	CalEPA (oversight/CUPA certification) Cal OES (state regulatory agency) CUPAs (implementation/enforcement)	Statewide	To prevent accidental releases of substances that can cause serious harm to the public and the environment, to minimize the damage if releases occur, and to satisfy community right-to-know law.
Industrial Safety Ordinance (ISO)	Contra Costa County & City of Richmond	Contra Costa County	To prevent accidental release of hazardous chemicals and minimize the damage if releases occur. To add additional requirements to support supplement the PSM and RMP.
Air Permit	Air Pollution Control Districts	Statewide	To write and enforce rules on air emissions, including from tanks, pipes, vents, and flares. To require ambient air monitoring and accidental release prevention plans.
Emergency Response			
Area Plans	CalEPA/Cal OES/CUPAs	Statewide	Local government blueprints for response to a hazardous materials release or threatened release. Must include requirements for multi-agency notification and coordination, impact minimization and emergency Response.
Hazardous Materials Business Plans	CalEPA/Cal OES/CUPAs	Statewide	Submitted annually by facilities that handle hazardous materials. Must identify hazardous materials at the facility, prepare a site map, develop an emergency response plan, and implement and employee training program.
State Emergency Response Commission (SERC); Local Emergency Planning Committees (LEPCs)	Cal OES (lead state agency)	Statewide	Serve as a forum for stakeholders and agencies to work together on training and other hazardous materials emergency planning activities.

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Appendix C – Map of Refineries in California

